

IRIYAMA et al.
Q63249
Preliminary Amendment

(g/cc) and a negative electrode specific surface area of 5.8 (m²/g). The same procedure as in Example 1 was carried out using this negative electrode, thereby preparing a coin type nonaqueous electrolyte secondary battery, and its charge and discharge properties were then measured. The results are shown in Table 2.

Page 23, first full paragraph:

<Comparative Example 2>

The same procedure as in the preparation of negative electrode numbers 1 to 6 was conducted except that NG-15 alone was used as a negative electrode active material, and pressed under a pressing pressure of 1.0 (ton/cm²) to obtain a negative electrode having a negative electrode filling density of 1.48 g/cc (g/cc) and a negative electrode specific surface area of 6.3 (m²/g). The same procedure as in Example 1 was carried out using this negative electrode, thereby preparing a coin type nonaqueous secondary battery, and its charge and discharge properties were then measured. The results are shown in Table 2.

Page 25, first full paragraph:

The same procedure as in Example 1 was conducted using this negative electrode active material to form a negative electrode. A filling density of the negative electrode was regulated to not less than 1.6 g/cc by the use of a uniaxial press. A pressing pressure of 2.6 (ton/cm²) was used to obtain a negative electrode having a negative electrode filling density of 1.64 (g/cc) and a negative electrode specific surface area of 1.7 (m²/g).

Page 26, second full paragraph through pages 27-28:

As in Example 7, a material obtained by graphitizing mesocarbon microbeads (MCMB3-28, manufactured by Osaka Gas Co., Ltd., specific surface area = 4.62 m²/g) was used as a graphite material whose surface was covered with amorphous carbon, and artificial graphite (SFG75, manufactured by Lonza Co., Ltd., average particle diameter = 27.3 μm) prepared from coal pitch as a raw material was used as flake graphite particles. MCMB3-28 and SFG75 were mixed so that a ratio of MCMB3-28 might be 75 wt% and a ratio of SFG75 might be 25 wt% of all the negative electrode carbon materials, thereby obtaining a negative electrode active material. As in Example 7, this negative electrode active material was used under a pressing pressure of 2.4 (ton/cm²) to obtain a negative electrode having a negative electrode filling density of 1.66 (g/cc) and a negative specific electrode surface area of 2.3 (m²/g). As in Example 7, a coin type nonaqueous electrolyte secondary battery was prepared, and its battery properties were then measured. The results are shown in Table 3.

<Example 9>

As in Example 7, a material obtained by graphitizing mesocarbon microbeads (MCMB30-28, manufactured by Osaka Gas Co., Ltd., specific surface area = 0.98 m²/g) was used as a graphite material whose surface was covered with amorphous carbon, and artificial graphite (SFG15, manufactured by Lonza Co., Ltd., average particle diameter = 6.1 μm) prepared from coal pitch as a raw material was used as flake graphite particles. MCMB30-28 and SFG6 were mixed so that a ratio of MCMB30-28 might be 75 wt% and a ratio of SFG15 might be 25 wt% of all the negative electrode carbon materials to obtain a negative electrode active material. The same procedure as in Example 7 was carried out except for the above

requirements to prepare a coin type nonaqueous electrolyte secondary battery. As in Example 7, this negative electrode active material was used under a pressing pressure of 2.4 (ton/cm²) to obtain a negative electrode having a negative electrode filling density of 1.62 (g/cc) and a negative electrode specific surface area of 2.2 (m²/g). As in Example 7, the coin type nonaqueous electrolyte secondary battery was prepared, and its battery properties were then measured. The results are shown in Table 3.

<Comparative Example 3>

The same procedure as in Example 7 was conducted except that graphitized MCMB3-28 alone was used as a negative electrode active material, thereby preparing a coin type nonaqueous electrolyte secondary battery, and its battery properties were then measured. The results are shown in Table 3. However, a pressing pressure in the preparation of a negative electrode was 2.4 (ton/cm²). In the thus prepared battery, a negative electrode filling density was 1.62 (g/cc) and a negative electrode specific surface area was 2.2 (m²/g).

<Comparative Example 4>

The same procedure as in Example 7 was conducted except that SFG15 alone was used as a negative electrode active material, thereby preparing a coin type nonaqueous electrolyte secondary battery, and its battery properties were then measured. The results are shown in Table 3. However, a pressing pressure in the preparation of a negative electrode was 1.5 (ton/cm²). In the thus prepared battery, a negative electrode filling density was 1.61 (g/cc) and a negative electrode specific surface area was 2.8 (m²/g).